67752

24.7600 SOV/126-8-5-4/29

AUTHORS: Vzdornov, V.Ye., and Tsidil'kovskiy, I.M.

TITLE: Adiabatic Galvano- and Thermomagnetic Phenomena in Semiconductors. Part II - Mixed Conductivity

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 5, pp 671-677 (USSR)

ABSTRACT: Tolpygo (Ref 1) and one of the present authors (Ref 2) developed the theory of adiabatic galvano- and thermomagnetic effects in impurity semiconductors. The present paper is concerned with these effects in semiconductors with mixed conductivity. The theory is developed using the assumptions and the symbols given in Ref 2. In addition, it is assumed that the mechanisms of electron and hole scattering are the same. It is shown that all the transverse galvanomagnetic and thermomagnetic effects in semiconductors with an equal electron and hole concentration depend on the magnetic field in the same way as in the case of impurity conductivity, i.e. in the low-field region the effects are proportional to H, and in the strong-field region they are inversely proportional to H (in the case of the Hall effect this refers not to the field Ey but

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Adiabatic Galvano- and Thermomagnetic Phenomena in Semiconductors. Part II - Mixed Conductivity

the current j_y). The character of the dependence of the longitudinal effects on the magnetic field is the same as in the case of impurity conductivity. Formulae are given describing the various effects, e.g. the Hall, Ettinghausen, Nernst, Leduc, etc. effects. There are 3 Soviet references.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, Academy of Sciences, USSR)

SUBMITTED: July 21, 1959

Card 2/2

PHASE I BOOK EXPLOITATION SOV/5072

Tsidil'kovskiy, Isaak Mikhaylovich

Termomagnitnyye yavleniya v poluprovodnikakh (Thermomagnetic Phenomena in Semiconductors) Moscow, Fizmatgiz, 1960. 396 p. 10,000 copies printed. (Series: Fizika poluprovodnikov i poluprovodnikovykh priborov)

Ed.: B. L. Livshits; Tech. Ed.: K. F. Brudno.

PURPOSE: This book is intended for students in schools of higher education, aspirants, and scientific and technical personnel concerned with the investigation, production, and utilization of semiconductors and semiconductor devices.

COVERAGE: The book presents the theory of thermomagnetic phenomena developed by the author and describes the so-called longitudinal-transversal effect discovered by him. In order to verify and develop his theory the author investigated numerous semiconductors of practical significance.

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It is claimed that the method opens new ways to investigate semiconductors and that it will be used extensively in the future. It is also claimed that this is the first monograph in world literature to be published on the subject. The author thanks A. F. Ioffe, V. P. Zhuze, and S. V. Vonsovskiy for their advice. There are 210 references: 88 Soviet (including 9 translations), 101 English, 14 German, 6 French, and 1 Czech.

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Introduction 7

Ch. I. Basic Characteristics of Thermomagnetic Phenomena 10

1. Determining basic characteristics of thermomagnetic effects 10

S/126/60/009/03/001/033
E032/E414

24.7600

AUTHORS: Tsidil'kovskiy, I.M. and Shirokovskiy, V.P.

TITLE: The Anisotropy of Galvano- and Thermomagnetic Phenomena in n-Type Germanium

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 321-326 (USSR)

ABSTRACT: The authors have carried out extensive calculations in order to elucidate the effect of the anisotropy in the effective mass of electrons on galvano- and thermomagnetic phenomena in n-type germanium. The following assumptions were made: 1) The energy surface has three extrema located on the diagonals of the elementary cube. Near each of these extrema the energy is of the form given by Eq (1), where h is Planck's constant divided by 2π and m_l and m_t are the longitudinal and transverse effective masses. The actual position of the extrema on the diagonals is unimportant in galvano- and thermomagnetic calculations. 2) Kinetic effects are associated only with transitions between states of a given extremum. On this approximation the carrier currents for each extremum are independent and the total

The Anisotropy of Galvano- and Thermomagnetic Phenomena in n-Type Germanium

current is the sum of the currents associated with the separate extrema. 3) Collision processes are described by a relaxation time τ which is isotropic and depends only on the energy of the electrons ε which is given by Eq (2). The tapping of electrons by phonons is not taken into account. The electric current $\vec{j}$ and the heat carried by the electrons $\vec{Q}_z$ are calculated using Eq (3), (4), (5) and (6). Three cases are considered: 1) The coordinate axes x, y, z coincide with the principal axes of the cube; 2) the z-axis lies along one of the diagonals of the face and x and y axes are at equal angles to the principal axes of the cube; 3) the z-axis is along one of the diagonals of the cube and the x and y axes are at equal angles to the principal axes of the cube. The results of calculations are summarized in Tables 1, 2 and 3, in which σ_o is the electrical conductivity, u is the electron mobility, N is the electron concentration, λ_D is the electron thermal conductivity and λ is the total thermal

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S/126/60/009/03/001/033
E032/E414

The Anisotropy of Galvano- and Thermomagnetic Phenomena in n-Type Germanium

conductivity. Other parameters are defined by the equations at the top of p 323. Table 1 summarizes the galvanomagnetic phenomena (first column gives the effect, second column refers to weak fields and the third column to strong fields). Table 2 gives the thermomagnetic phenomena and Table 3 indicates the direction of the magnetic field. It is clear from these tables that the parameters which characterize the anisotropy of the effects enter into the formulae as coefficients of terms which depend on the scattering mechanism, ie the formulae for galvano- and thermo-magnetic phenomena in the anisotropic case can be formally obtained from the corresponding formulae for the isotropic case by a simple renormalization of the coefficients a_p, b_p and c_p. Since the constants responsible for anisotropy enter into the formulae for all the effects together with terms containing the magnetic field, the experimental determination of these constants in a transverse magnetic field is rather

The Anisotropy of Galvano- and Thermomagnetic Phenomena in n-Type Germanium

difficult. Of the effects which tend to saturate in strong magnetic fields, only the resistance is appreciably dependent on direction. The anisotropy parameter γ can be determined from a known magnitude of the saturated $\rho^{\perp}$. Other experimental possibilities are briefly mentioned. There are 2 figures, 3 tables and 2 references, 1 of which is Soviet and 1 English.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)

SUBMITTED: July 21, 1959

Card 4/4

87895

S/126/60/010/003/002/009/XX
E201/E391

9.4300

AUTHORS: Kharus, G.I. and Tsidil'kovskiy, I.M.

TITLE: Anisotropy of the Photomagnetic Effect in Cubic Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10, No. 3, pp. 341 - 345

TEXT: If light falls normally (along the z-axis) on a semiconductor plate in a magnetic field, which is applied in the plane xz and makes an angle Θ with the x-axis, then an electric field E_1 appears in the x-direction (transverse photomagnetic effect) and a field E_2 appears in the y-direction (normal photomagnetic effect). Anisotropy of the transverse photomagnetic effect appears as a characteristic dependence of E_1 on the angle of rotation of the semiconductor plate about the z-axis. Such anisotropy was observed by Kikoin and Bykovskiy (Refs. 1, 2) in germanium. The present paper gives a theoretical explanation of this anisotropy.

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87895
S/126/60/010/003/002/009/XX
E201/E391

Anisotropy of the Photomagnetic Effect in Cubic Crystals

The authors discussed both photomagnetic effects in crystals of cubic symmetry subjected to weak magnetic fields. Calculations were based on the following two assumptions: 1) a sample possessed impurity conduction in darkness (n-type semiconductor was assumed), i.e. $n_o \gg p_o$, where n_o and p_o are equilibrium densities of electrons and holes, respectively; 2) the photocarrier densities (Δn, Δp) were considerably smaller than the majority equilibrium carrier density (n_o), i.e. $\Delta n = \Delta p \ll n_o$. The second assumption represented conditions of a weak illumination. Calculations for n-type germanium (spherical energy surfaces were assumed) showed that the angular dependence of the photomagnetic effects for any magnetic fields was correctly predicted by the phenomenological theory developed by the authors for cubic

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S/126/60/010/003/002/009/XX
E201/E391

Anisotropy of the Photomagnetic Effect in Cubic Crystals

crystals. Allowance for the form of the energy surfaces of holes in germanium and for various mechanisms of carrier scattering will be dealt with in a separate communication.
Note: The paper is entirely theoretical.
There are 5 references: 4 Soviet and 1 non-Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals of the AS, USSR)

SUBMITTED: June 4, 1960

Card 3/3

40987

S/181/62/004/009/023/045
B104/B186

24.7600

AUTHORS: Guseva, G. I., and Tsidil'kovskiy, I. M.

TITLE: Transfer effects in n-type InSb

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2490-2506

TEXT: An attempt was made to elucidate the influence which deviation of electron dispersion in InSb from the square law exerts on galvanomagnetic and thermomagnetic effects; also to establish, from a comparison of experimental with theoretical results, whether the optical or the acoustic scattering mechanism predominates. For this purpose the thermomagnetic and galvanomagnetic effects in n-type InSb were studied within the range of mixed conductivity, both below and above the characteristic temperature, and using electron gases of different degeneracy. Conclusions: (1) At 295 and 600°K, the magnetic resistance is in good agreement with the values obtained by assuming optical dispersion. The values obtained for acoustic scattering differ from the above values by 2 to 4 orders of magnitude. (2) At 295°K, the magnetic resistance in strong magnetic fields agrees well with the values obtained

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Transfer effects in n-type InSb

for optical dispersion. (3) R_0/R_{∞} agrees well with the values obtained for optical scattering, but differs considerably from those obtained for acoustic scattering. (4) The variations of the thermo-emf in a weak magnetic field at 600°K, and the Nernst-Ettinghausen effect observed at this temperature, are consistent with the values obtained for optical dispersion; but they differ greatly from those obtained for acoustic scattering. There are 5 figures and 6 tables.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk
(Institute of the Physics of Metals AS USSR, Sverdlovsk)

SUBMITTED: May 3, 1962

40890

S/181/62/004/009/028/045
B101/B186

24.7600,

AUTHOR: Tsidil'kovskiy, I. M.

TITLE: Scattering of electrons and holes in alloyed InSb, InAs, and GaAs

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2539-2549

TEXT: Attempts were made to determine qualitatively the relative importance of various mechanisms of impurity ions, acoustic and optical lattice vibrations. A simplified computation method was arrived at for the case of increasing degeneration of the electron gas in $A^{III}B^{V}$ compounds. Under the condition $T \gg \Theta_0$, $\Theta_0 = \hbar\omega_0/k_0$, the following is written for the relaxation times: $1/\tau_{ac} \sim T\varepsilon^{1/2}$; $1/\tau_{opt} \sim T\varepsilon^{-1/2}$; $1/\tau_{imp} \sim \varepsilon^{-3/2} \ln b$; $b = 8mr_0^2\varepsilon/\hbar^2$, where ε is the energy of the electron, n = electron concentration, m = effective mass of the electron, Required are the dependence of the mean energy of electrons on n, and the

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degeneration η, at which this dependence becomes significant. The approximation $\bar{E} \sim n^s$ gives: $1/\tau_{ac} \sim n^{s/2}$; $1/\tau_{opt} \sim n^{-s/2}$; $1/\tau_{imp} \sim n^{1-3s/2} \ln(An^{s-p})$, where p is calculated from $r_o^2 \sim n^{-r}$, and $A = (h\varkappa/e^2)(2k_oT/\pi m)^{1/2}$; $\varkappa$ is the dielectric constant. With intense degeneration, η becomes $\sim n^{2/3}$; $1/\tau_{ac} \sim n^{1/3}$; $1/\tau_{opt} \sim n^{-1/3}$; $1/\tau_{imp} \sim \ln(An)$. Analysis of these equations shows: With slight degeneration ($\eta < 0$), an increasing n produces more intense scattering on impurities whereas the scattering on lattice vibrations remains unchanged. With $0 \ll \eta \ll 5$, the scattering on acoustic vibrations increases with increasing n, whereas the scattering on optical vibrations decreases. With $\eta > 5$, the scattering on acoustic vibrations increases with increasing n more quickly than the scattering on impurities, and the scattering on optical vibrations decreases even more quickly. These results are applied to measurements of the coefficient Q^1 of the transverse Nernst-Ettingshausen effect, which were made for n-type InSb by O. V. Emel'yanenko,

F. P. Kesamanly, D. N. Nasledov (FTT, 4, 546, 1962), for n-type GaAs by D. N. Nasledov (Proc. Int. Conf. Phys. on Semicond., Prague, p. 974, 1960; J. Appl. Phys., 32, 2140, 1961), and for p-type InSb by V. P. Zhuze, I. M. Tsidil'kovskiy (ZhTF, 28, 2372, 1958). It is shown that according to E. Kane (J. Phys. Chem. Solids, 1, 243, 1957) the nonparabolicity of the conduction band must be taken into account, and that at high temperatures the electrons are mainly scattered on optical vibrations, the holes mainly on acoustic vibrations. There are 2 figures and 1 table. The most important English-language reference is: H. Ehrenreich, J. Appl. Phys., Suppl., 32, 2155, 1961.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of Physics of Metals AS USSR, Sverdlovsk)

SUBMITTED: May 10, 1962

44512
S/181/63/005/001/041/064
B108/B180

AUTHORS: Guseva, G. I., and Tsidil'kovskiy, I. M.

TITLE: Concentration dependence of the effective mass of the electrons in InSb, InAs, and GaAs

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 263-268

TEXT: The dispersion relations for InSb, InAs and GaAs do not follow a square law. The effective mass is therefore a function of energy, which can be given approximately as $m = m_n(1 + (2 - 4\nu)\zeta - 6\nu\zeta^2)$, where $\nu = m_n/m_o$, $\zeta = \varepsilon/\varepsilon_g$, m_n is the electron mass at the bottom of the band, m_o is the free electron mass ε_g is the forbidden band width. Determination of the effective mass from De Broglie's relation $\hbar\vec{k} = m\vec{v}$, where $\varepsilon = \varepsilon(|\vec{k}|)$ gives cyclotron mass $m^{-1} = \frac{1}{\hbar^2}\,\frac{1}{k}\,\frac{d\varepsilon}{dk}$. This holds for InSb, InAs, and GaAs as these compounds have spherical isoenergetic electron surfaces. If the electron gas is degenerate, the effective mass as

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Concentration dependence of ...

formulated above is only applicable as long as $\zeta/\varepsilon_g - \bar{\zeta} < k_o T/\varepsilon_g$ (ζ is the Fermi energy). However, $m(\varepsilon)$ either has to be averaged over the states or a mean energy $\bar{\varepsilon}$ has to be found so that $m = m(\bar{\varepsilon})$. $\bar{m}(\varepsilon)$ was calculated as a function of concentration n. The curves are similar for all three compounds: initially flat, sharp rise between concentrations of 10^{18} and 10^{19} cm^{-3}. $\bar{m}$ increases with temperature, particularly at concentrations where degeneracy is still low. The experimental and calculated values of the effective mass agree well with one another. There are 4 figures and 3 tables.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk
(Institute of Physics of Metals AS USSR, Sverdlovsk)

SUBMITTED: August 7, 1962

DOMANSKAYA, L.I.; OMEL'YANOVSKIY, E.M.; PISTUL', V.I.; TSIDIL'KOVSKIY, I.M.

Nernst-Ettingshausen effect in heavily alloyed n-type germanium. Fiz. tver. tela 5 no.10:3046-3048 O '63. (MIRA 16:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti, Moskva, i Institut fiziki metallov AN SSSR, Sverdlovsk.

TSIDIL'KOVSKIY, I.M.; SOKOLOV, V.I.; AKSEL'ROD, M.M.

Resistance of semimetals in strong magnetic fields. Fiz. met. i metalloved. 16 no.2:318-320 Ag '63. (MIRA 16:8)

1. Institut fiziki metallov AN SSSR.
(Antimony--Electric properties)
(Magnetic fields)

TSIDIL'KOVSKIY, I.M.

"Semiconductors" by R.Smith. Reviewed by I.M.TSidil'kovskii. Usp. fiz. nauk 79 no.3:585-586 Mr '63. (MIRA 16:3)
(Semiconductors) (Smith, R.)

"Longitudinal magnetoresistance of heavily doped n-Ge in high magnetic fields."

report submitted for Intl Conf on Physics of Semiconductors, Paris, 19-24 Jul 64.

L [illegible]-5 EWT(1)/[illegible]
ACCESSION NR: AP500[illegible] S/0181/65/007/00[illegible]/00[illegible]/0053

AUTHORS: Domanskaya, L. [illegible] I. I.; Tsidil'kovskiy, I. M.

TITLE: The Nernst-Ettingshausen effect in doped n-type silicon

TOPIC TAGS: silicon, Nernst Ettingshausen effect, doping, temperature dependence, concentration [illegible]dependence, Hall effect

ABSTRACT: The Nernst-Ettingshausen [illegible] (NE) effect was measured [illegible] the temperature [illegible] 100-[illegible] K. [illegible] were made in magnetic fields up to 15 kOe directed in al[illegible] the [111] axis. The temperature gradients in the samples were in the range 3--8 deg/cm. The electron concentrations were [illegible] the Hall effect, and [illegible] The values obtained for the NE coeffi[illegible] dependence are illustrated

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L 24914-65
ACCESSION NR: AP5003412

in Fig. 1 of the enclosure. An analysis of the conditions for the applicability of the Born [illegible] and the screened Coulomb

[illegible] conditions

[illegible] arsenic contents [illegible]

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of Metal Physics AN SSSR)

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TOPIC TAGS: indium antimonide, magnetoresistance, magnetoresistance

the electron takes place. The probability of such a [illegible]

[illegible] Metal Physics AN SSSR) [illegible] SSSR, Sverdlovsk (Insti-

SUBMITTED: 19Aug64

NR REF SOV: 001

L 10914-66 EWT(l)/EWP(t)/EWP(b) IJP(c) JD/WW/GG

ACC NR: AP6002037 SOURCE CODE: GE/0030/65/012/002/0667/0678

AUTHOR: Tsidilkovskii, I. M.; Akselrod, M. M.; Uritsky, S. I.

ORG: /Tsidilkovskii, Akselrod/ Institute of Metal Physics, Sverdlovsk /Tsidilkovskii, Uritsky/ Ural State University

TITLE: Spin-magnetophonon resonance in semiconductors

SOURCE: Physica status solidi, v. 12, no. 2, 1965, 667-678

TOPIC TAGS: semiconductor, magnetoresistance, phonon, conduction electron, electron spin, electron interaction, semiconducting material

ABSTRACT: A theory of spin-magnetophonon resonance is presented. The spin interaction of electrons with optical phonons is described by the introduction of vector and scalar potentials of the optical vibrational field. It is shown that the spin-magnetophonon resonance should cause a minimum in the longitudinal magnetoresistance. The experimental data for n-InSb and N-InAs are discussed on the basis of this theory. In experiments conducted on N-InSb, a maximum transverse magnetoresistance was observed at 82 kg. This peak coresponds to the spin-magnetophonon resonance. The g-factor for the conduction electrons calculated from this maximum is in good agreement with the theoretical value. A minimum in the longitudinal magnetoresistance observed at 24 kg was atrributed to the combined magnetophonon and spin-magnetophonon resonance scattering. Orig. art. has: 17 formulas and 3 figures. [CS]

SUB CODE: 20 / SUBM DATE: 05Jul65/ ORIG REF: 004/ OTH REF: 008/ ATD PRESS: 4170

Card 1/1

GUSEVA, G.I.; TSIDIL'KOVSKIY, I.M.

Transport phenomena in n-type InSb. Fiz. tver. tela 4 no.9:2490-2506 S '62. (MIRA 15:9)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.
(Indium antimonide crystals) (Electrons—Scattering)

TSIDIL'KOVSKIY, I.M.

Scattering of electrons and holes in alloyed InSb, InAs, and GaAs. Fiz. tver. tela 4 no.9:2539-2549 S '62. (MIRA 15:9)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.
(Indium alloys) (Gallium alloys) (Electrons—Scattering)

L 00684-66 EWP(k)/EWA(c)/EWT(l)/EWT(m)/EWP(b)/EWP(t) IJP(c) JD/HW

ACCESSION NR: AP5012579 UR/0181/65/007/005/1561/1562

AUTHOR: Demchuk, K. M.; Tsidil'kovskiy, I. M.; Rodionov, K. P.

TITLE: Transport phenomena in doped indium antimonide at high pressures

SOURCE: Fizika tverdogo tela, v. 7, no. 5, 1965, 1561-1562

TOPIC TAGS: indium antimonide, electric conductivity, Hall constant, thermo emf, Nernst effect, pressure effect, electron mobility, optic scattering, acoustic scattering

ABSTRACT: The authors investigated the electric conductivity, the Hall effect, the thermal emf, and the transverse Nernst-Ettingshausen effect in n-InSb single crystals with $n \approx 2.4 \times 10^{-8}$ cm^{-3} under pressures up to 25,000 kg/cm^2 at 290K. The measurements were made in a Butuzov type multiplicator (V. P. Butuzov et. al., Tr. Inst. kristallogr. AN SSSR v. 11, 233, 1955). The Hall constant remains practically unchanged during the entire range of temperatures, the thermal emf decreases from 80 to 70 μV/deg, the mobility (the product of the Hall effect by the electric conductivity) decreases by a factor of 2.7, and the Nernst-Ettingshausen effect decreases by a factor of 4. The observed positive sign of the Nernst-Ettingshausen effect offers evidence that the optical scattering is not the decisive mechanism,

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L 00684-66

ACCESSION NR: AP5012579

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and that acoustic scattering is predominant. The measured quantities were also calculated theoretically, using the formulas of G. I. Guseva and I. M. Tsidil'kovskiy (FTT v. 4, 2490, 1962) under certain assumptions, and the agreement between theory and experiment was satisfactory at high pressure (within 25%) but poor at atmospheric pressure. The discrepancy is attributed to improper approximation of the dispersion. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki metallov SO AN SSSR, Sverdlovsk (Institute of Metal Physics, SO AN SSSR)

SUBMITTED: 14Dec64 ENCL: 00 SUB CODE: SS

NR REF SOV: 003 OTHER: 003

Card 2/2

[illegible], L.I.; [illegible], N.I.; [illegible], I.M.

Hernst-Ettingshausen effect in doped n-silicon. Fiz. tver. tela 7 no.1:46-53 Ja '65. (MIRA 18:3)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

TSIDIL'KOVSKIY, I.M.; AZBEL', M.M.; SOKOLOV, V.I.

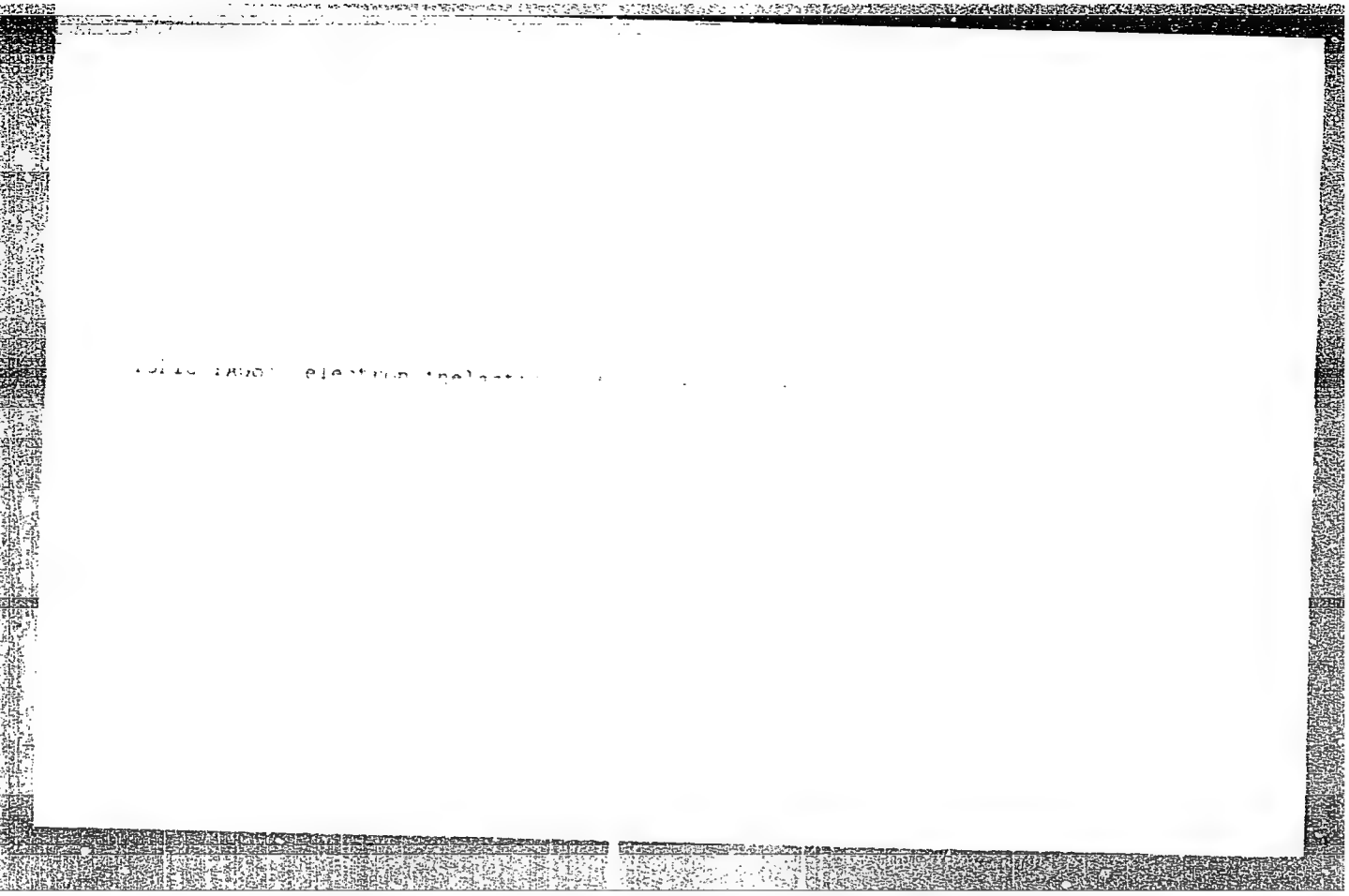
Magnetoresistance oscillations in pure n-InSb. Fiz. tver. tela 7 no.1:316-319 Ja '65. (MIRA 18:3)

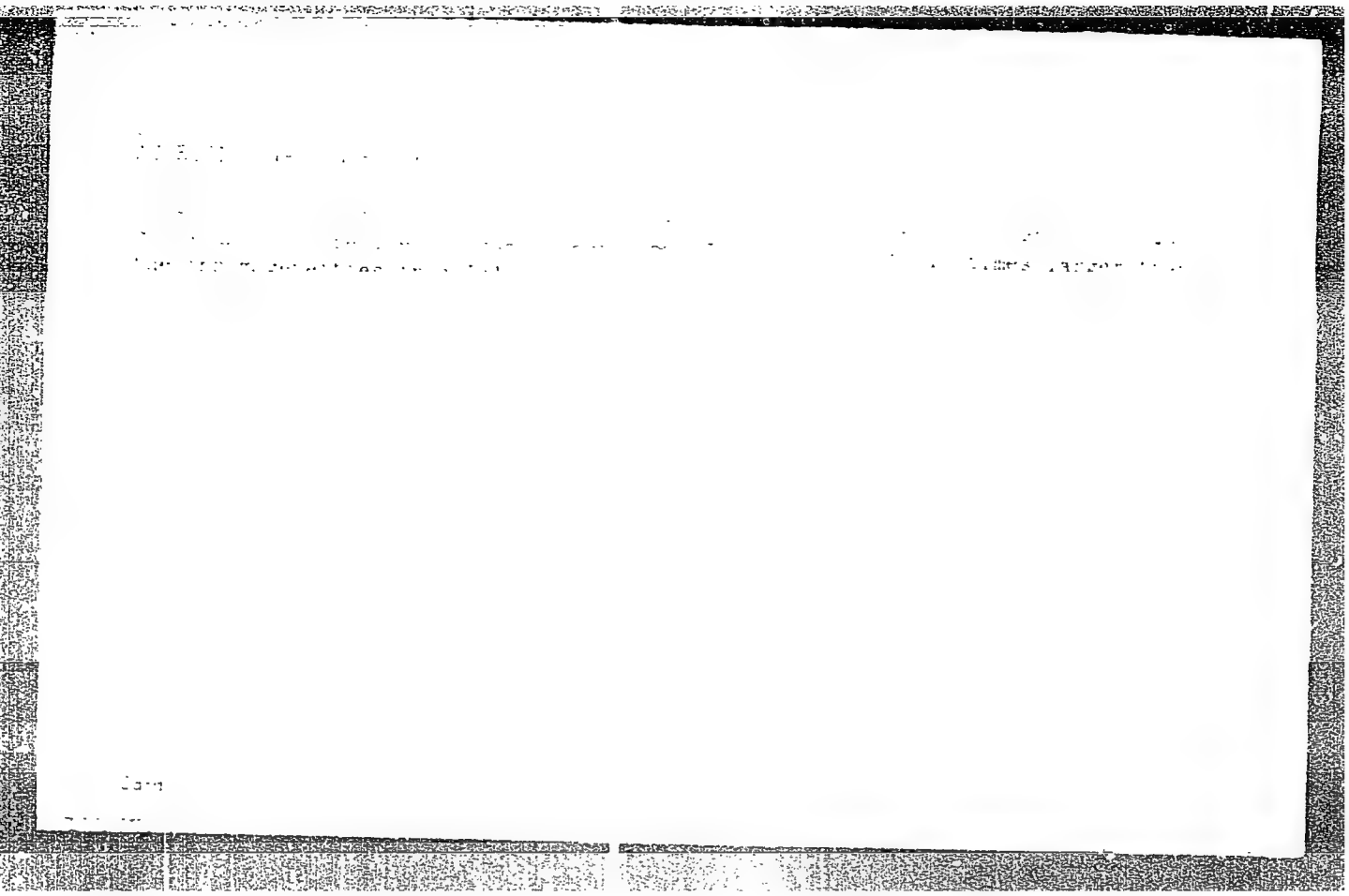
1. Institut fiziki metallov AN SSSR, Sverdlovsk.

DEMCHUK, K.M.; TSIPIL'KOVSKIY, I.M.; RODICHOV, K.P.

Transport phenomena in doped indium antimonide at high pressures.
Fiz. tver. tela 7 no.5:1561-1562 My '65. (MIRA 18:5)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.





DAVYDOV, A.B.; TSIDIL'KOVSKIY, I.M.

Study of magnetoresistance at superhigh frequencies. Prib. i tekh. eksp. 9 no.3:172-174 My-Je '64 (MIRA 18:1)

1. Institut fiziki metallov AN SSSR.

TSIDIL'KOVSKIY, I.M.

Further on current carrier scattering in InSb type compounds. Fiz. tver. tela 6 no.2:627-631 F '64. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

L 18753-66 EWT(l)/EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6003772 SOURCE CODE: UR/0181/66/008/001/0120/0123

AUTHORS: Davydov, A. B.; Tsidil'kovskiy, I. M.

ORG: Institute of Metal Physics AN SSSR, Sverdlovsk (Institut fiziki metallov AN SSSR)

63
B

TITLE: Electric conductivity of n-Ge in strong electric microwave fields

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 120-123

TOPIC TAGS: germanium, electric conductivity, microwave, alternating electromagnetic field, relaxation process

ABSTRACT: In view of the complexity of existing methods of measuring the integral conductivity of semiconductors in microwave fields, the authors have measured the dependence of the conductivity of n-Ge on the electric field by a contactless method which is claimed to be free of the shortcomings of the earlier methods. The measurements were made on a sample with density 6×10^{13} cm^{-3} at 300 and 85K, in

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L 18753-66
ACC NR: AP6003772

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the form of a rectangular rod placed in the middle of the broad wall of a shorted rectangular waveguide, parallel to the electric field vector, at a distance of one-quarter wavelength from the short circuit. The rod and waveguide had equal lengths. A TE_{10} mode with frequency 9450 Mc was excited in the waveguide. The nonlinearity of the conductance gives rise to harmonics, and the measurement method is based on determining the Fourier components of these harmonics. At 300K the dependence of the conductance on the field was found to agree well with the empirical relation given by J. Zucker et al. (J. Appl. Phys. v. 32, 2606, 1961), but the agreement at 85K is much worse. By comparing the results obtained in microwave and constants fields, the authors determine the relaxation time of the carrier, which is found to be equal to 3×10^{-11} sec at 85K. Orig. art. has: 2 figures and 4 formulas.

SUB CODE: 20/ SUBM DATE: 03Jul65/ ORIG REF: 002/ OTH REF: 007

Card 2/2 Sm

POMORTSEV, R.V.; TSIDIL'KOVSKIY, I.M.

Movement of a conductivity electron in a strong electric field. Fiz. met. i metalloved. 17 no.1:155-158 Ja '64. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR.

L 36249-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6023633 SOURCE CODE: UR/0386/66/004/001/0011/0015

AUTHOR: Demchuk, K. M.; Tsidil'kovskiy, I. M.; Rodionov, K. P.

ORG: Institute of Metal Physics, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Pressure dependence of electron effective mass in indium antimonide

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 1, 1966, 11-15

TOPIC TAGS: indium compound, antimonide, forbidden band, hydrostatic pressure, pressure effect, thermal emf, Hall constant, electron density, energy band structure

ABSTRACT: The authors investigated experimentally the effect of hydrostatic pressure up to 16.5 katm on the effective mass m_n of the electrons in InSb at 96K, with an aim at checking on the linear relation between these two quantities which follows from Kane's theory. The experiment consisted of measuring the thermal emf and the Hall constant in classically strong fields. The pressure was produced at nitrogen temperatures by a method proposed by Ye. S. Itskevich (PTE No. 4, 148, 1963). The measurements were made at temperature gradients 3 - 6 deg/cm on samples measuring 10 x 30 x 2 mm. Samples with two values of the electron density (2.2×10^{14} and 4.7×10^{13} cm^{-3}) were tested. It is concluded from the disparity between the theoretical and experimental data that the influence of hydrostatic pressure on the electron effective mass cannot be explained within the framework of Kane's theory and that a quantitative

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L 36249-66

ACC NR: AP6023633 O

theore, in which account is taken of the dependence of the band structure on the lattice period, must be developed for this purpose. A possible interpretation of the pressure dependence of the electron density is offered, but it is still concluded that this dependence is still not adequately explained. Orig. art. has: 3 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 26Apr66/ ORIG REF: 002/ OTH REF: 003

Card 2/2

L 44814-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6032017 SOURCE CODE: UR/0386/66/004/006/0205/0208

47
B

AUTHOR: Aksel'rod, M. M.; Tsidil'kovskiy, I. M.

ORG: Institute of Physics of Metals, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Spin magnetophonon and magnetophonon oscillations of magnetoresistance in n-InAs

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 6, 1966, 205-208

TOPIC TAGS: phonon interaction, magnetoresistance, galvanomagnetic effect spin phonon interaction, spin resonance, indium compound, antimonide

ABSTRACT: This is a continuation of earlier work (Fiz. tverdogo tela v. 7, 316, 1965; Phys. Stat. Sol. v. 12, 667, 1965) on spin-magnetophonon resonance (SMR). It is shown that in n-InSb the results explain the observed minimum of the longitudinal magnetoresistance (ρ_{zz}), which is due either to SMR or to combined transitions. Investigations of longitudinal magnetoresistance in single-crystal n-InAs with $n = 2.2 \times 10^{16}$ cm^{-3} at 300K have shown that ρ_{zz} does indeed have a minimum located at 480 kG. If it is assumed that this minimum is due to SMR, then the value $|g_0| = 19$ obtained for the g-factor is in good agreement with theory. The authors investigated also the transverse magnetoresistance (ρ_{xx}) in the temperature interval 250 - 220K, and found that ρ_{xx} has a maximum at 76 kG, corresponding to MPR transitions. It is shown, however, that these transitions do not cause the minimum of ρ_{zz} observed at 78 kG. The maxi-

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ACC NR: AP6032017 O

mum of ρ_{zz} is situated at 110 kG. The causes for such a shift of the maximum of ρ_{zz} relative to the resonant value of the field are explained. It is also shown that in the $\Omega\tau \sim kT$ region ρ_{zz} has a negative section in the form of a broad minimum. Therefore the presence of an MPR maximum at 110 kG leads to the appearance of two minima at ~78 and ~160 kG, which are not connected with the resonant scattering. Reasons why the maximum of ρ_{zz} at 110 kG cannot be related to SMR transition are also given. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 10Jun66/ ORIG REF: 004/ OTH REF: 003

Card 2/2

87950
S/115/60/000/012/003/018
B021/B058

9.6100

AUTHORS: Kurochkin, A. P. and Tsidulko, F. V.

TITLE: Use of Pneumoelectric Pickups Under Transient Conditions

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 12, pp. 11-13

TEXT: The results of metrological investigations of the so-called "dynamic" utilization of pickups, i.e. their utilization under transient conditions, are mentioned in this paper. This investigation method was worked out at the Bureau of Interchangeability with bellows-sealed and membrane pickups in a wide range of the pneumatic-system parameters. Fig. 1 shows some experimental curves, characterizing the movement of the mobile system of the bellows-sealed pickup as a time function. For the purpose of determining the error amounts, a special installation was fitted which made it possible to standardize the time by means of an electronic time relay. The feed voltage was stabilized by means of a ferroresonance voltage stabilizer of the type СМЭ-120-0.1 (SME-120-0.1), in order to increase the operating accuracy of the time relay. The actual length of time was determined by an electric stop watch of the type ПВ-53Л(PV-53L) with a

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scale division of 0.01 sec. Fig. 2 shows the summary errors in μ which were found experimentally. The curves of dynamic errors, obtained from the curves in Fig. 2 through mathematical calculation, are shown in Fig. 3. The data were compiled and tabulated on the basis of the curves in Fig. 3 as well as a number of other curves of this type. The dynamic measuring error, caused by a known reduction of the measuring time, can be found by means of the data tabulated. These data may be utilized for a membrane pickup, by cutting the error amounts by 10%. Investigations showed that the errors of time standardization do not exceed 0.05 sec, if this standardization is provided by the kinematics of the automatic control itself. It follows therefrom that in such automatic controls the measuring time may be cut by 1.5 to 2 times without the installation of time relays. This was put into practice in one of the automatic devices for the control of motor car pistons. There are 3 figures, 1 table, and 1 Soviet reference.

TSIBULKO, F.V.

[Dynamics of pneumatic devices for linear measurements] Dinamika pnevmaticheskikh priborov dlia lineinykh izmerenii. Moskva, Mashinostroenie, 1965. 153 p. (MIRA 18:2)

S/115/61/000/008/001/009
E194/E119

AUTHORS: Kurochkin, A.P., and Tsidulko, F.V.

TITLE: Pressure stabilisers for compressed air instruments, for linear measurements

PERIODICAL: Izmeritel'naya tekhnika, no.8, 1961, 4-7

TEXT: A theoretical and experimental study has been made by the Byuro vzaimozamenyayemosti Gosudarstvennogo Komiteta avtomatizatsii i mashinostroyeniya (Interchangeability Bureau of the State Committee for Automation and Mechanical Engineering) of pressure stabilisers which operate with air supply pressures of 3 to 6 atm and output (or working) pressures of 0.3 to 2.8 atm at flow rates up to 150 n.t.p. litres/min or occasionally up to 250 n.t.p. litres/min. They are required to maintain the working pressure accurately. The four main classes of pressure regulator are shown in Fig.1: (a) inverse acting, (б) direct acting, (в) inverse acting with amplifier, (г) variant of direct acting. For stabilisers of the inverse acting type the following expression is derived for the working pressure as function of the supply pressure and flow rate:

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$$H = \left(\frac{P_1 - P_2}{F_{эфф} - f_{кл}}\right) - \left(\frac{f_{кл}}{F_{эфф} - f_{кл}}\right)P_c - \left[\frac{K_1 + K_2}{Bd_{кл}(F_{эфф} - f_{кл})}\right]\left(\frac{Q}{P_c + 1.03}\right) \quad (1)$$

where: H = working pressure, atm; P_c = supply pressure, atm; Q = air flow rate n.t.p. litres/min; P_1 and P_2 = forces in main and return springs of stabiliser with valve shut, kg, $P_1 \geq P_2$; $F_{эфф}$ = effective diaphragm area, cm^2; $d_{кл}$ = valve diameter, cm; $f_{кл}$ = valve aperture area, cm^2;

$B = 62.3 \times 10^3 \times \frac{\alpha}{\sqrt{273 + t^o}}$ $\frac{\text{litres}}{\text{kg.min}}$ when air flow conditions through the valve are supercritical, i.e. when $\frac{H + 1.03}{P_c + 1.03} \leq 0.528$ and

Pressure stabilisers for compressed.... S/115/61/000/008/001/009
E194/E119

$$B = 241 \cdot 10^3 \frac{\alpha}{\sqrt{273+t^\circ}} \sqrt{\left(\frac{H+1.03}{P_c+1.03}\right)^{1.43} - \left(\frac{H+1.03}{P_c+1.03}\right)^{1.71}} \frac{\text{litres}}{\text{kg.min}}$$

for subcritical air flow through the valve, i.e. when $\frac{H+1.03}{P_c+1.03} > 0.528$, where: α is the valve flow factor, t° is the air temperature at the stabiliser inlet.
In an inverse acting regulator, at zero flow, as the supply pressure is raised from zero the working pressure rises until the rated value is slightly exceeded, and at higher supply pressures the working pressure drops slightly to the rated value. As the flow rate is increased the working pressure rises more slowly to the rated value at which it remains. The effect is shown in the experimental curve of Fig.3 in which the working pressure is plotted against the supply pressure for flow rates Q ranging from 10 n.t.p. litres/min to 153 n.t.p. litres/min. The

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dependence of the working pressure on the supply pressure might be reduced either by reducing the second and third terms on the right hand side of Eq.(1) or by making these terms compensate one another. The terms can only be reduced by increasing the effective area of the diaphragm, which should not be made more than 60-100 mm diameter to avoid having regulators of excessive size. However, the valve diameter acts differently in the second and third terms and so $d_{кл}$ should be selected to give the maximum compensation. The experimental curves show that for any given stabiliser there exists a flow rate for which the characteristic is mostly near in the working range, e.g. in Fig.3 at 80 n.t.p. litres/min. By reducing $f_{кл}$ the characteristics become flatter. As regulators work over a wide range of flow rates, $f_{кл}$ should be selected in such a way that the maximum and minimum flow rates give curves of approximately equal but opposite angles to the horizontal. It should be noted that the second component of Eq.(1) can be removed by relieving the valve of system pressure, but as this term can then not be used to compensate the third term this only increases the error which

results from variations in system pressure. The third component can be reduced by making the spring less stiff but longer, but this too gives an increase in overall dimensions. For direct acting stabilisers the equilibrium equation is as follows:

$$H = \left(\frac{P_1 - P_2}{F_{эфф} + f_{кл}}\right) + \left(\frac{f_{кл}}{F_{эфф} + f_{кл}}\right) P_c - \left[\frac{K_1 + K_2}{Bd_{кл}(F_{эфф} + f_{кл})}\right] \cdot \left(\frac{Q}{P_c + 1.03}\right) \quad (2)$$

In this case the second and third terms do not compensate one another and so the error can be reduced only by reducing the size of the second and third terms. Examination of the relationship between H and Q for inverse and direct acting regulators shows that whilst both are of about the same size and complexity the inverse acting type is more accurate than the direct acting type and so is to be preferred. A stabiliser of the inverse acting with amplifier type has an error less than that of the inverse acting stabiliser alone by a factor of 2.5, which results from its more complicated design and construction. There is a need for accurate construction which at the same time is simple, and that of Fig.12 is recommended. The equation for this regulator is as

follows:

$$H = \frac{P}{f_{кл}} + \left(\frac{f_{кл} - F_{эф}}{f_{кл}}\right) P_c - \frac{K}{Bd_{кл} f_{кл}} \left(\frac{Q}{P_c + 1.03}\right) E \qquad (3)$$

In this case the second term may be reduced practically to zero by making $F_{эфф} = f_{кл}$ whilst the third term is several times less than in stabilisers of the inverse acting and direct acting types because $d_{кл}$ is greater. In this stabiliser there is no need to increase $F_{эфф}$ excessively to improve accuracy and so the overall dimensions can be smaller.
There are 3 figures.

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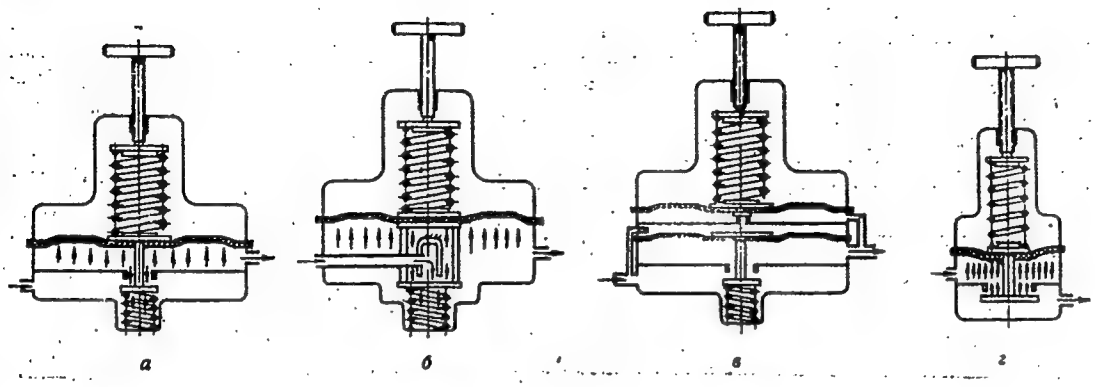
Pressure stabilisers for compressed... S/115/61/000/008/001/009
E194/E119



Card 7/8

Fig. 1

Pressure stabilisers for compressed ... S/115/61/000/008/001/009
E194/E119

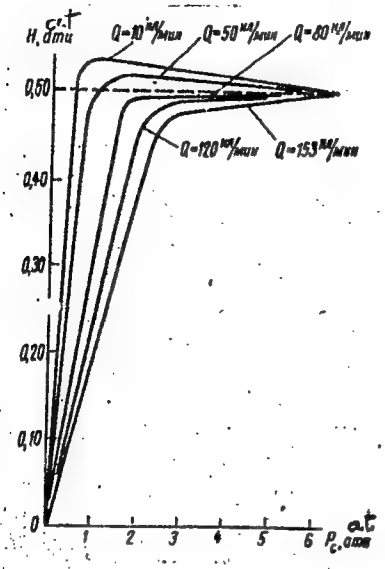


Fig.3

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25 (1, 5), 28 (1) SOV/115-59-11-4/36

AUTHORS: Kurochkin, A.P., Tsidulko, F.V.

TITLE: The Response Time of Pneumatic Measuring Systems

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 11, pp 15-18

ABSTRACT: The authors report on an experimental investigation of the response time of a "Solex" pneumatic measuring device which they performed at the Byuro Vzaimozamenyayemosti (Bureau of Interchangeability). This measuring device was investigated under all possible operating conditions and with different nozzles. The dependence of the response time on the diameter of the input nozzle is shown by curve 1 in Fig 1. The experimental data were compared to theoretical calculations and showed a good coincidence. The authors discuss various possibilities of decreasing the response time which will depend in each case on the design of the pneumatic measuring system. Fig 2 shows a test installation for determining the response time of high-pressure measuring instruments with bellows-type pressure gages. The re-

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The Response Time of Pneumatic Measuring Systems

sponse times of the bellows-type devices are compiled in a table. There are 1 diagram, 3 graphs, 1 table and 1 Polish reference.

KUROCHKIN, A.P.; NOSKIN, E.L.; TSIDULKO, F.V.

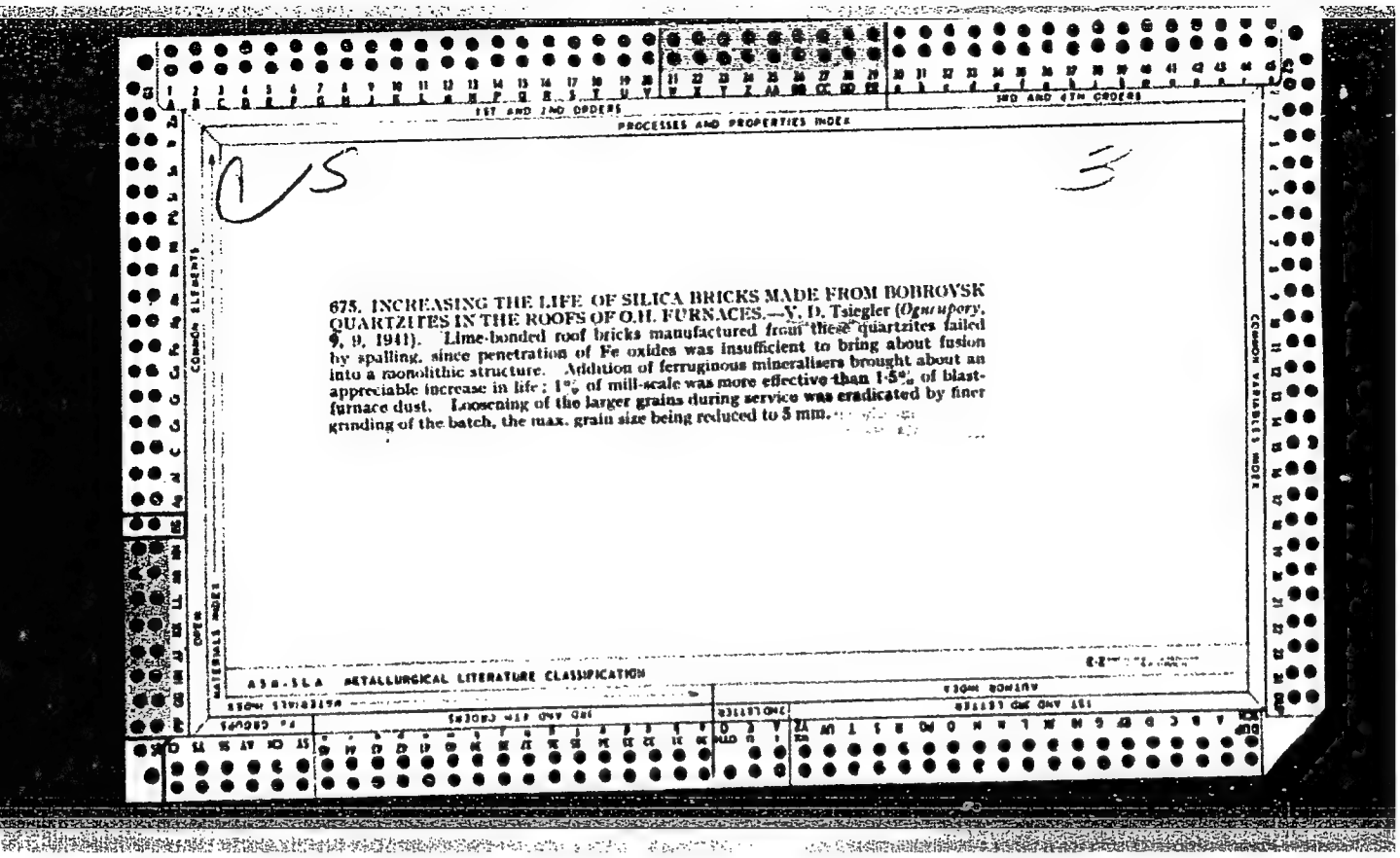
Errors of pneumatic systems for measuring linear dimensions.
Izm.tekh. no.2:14-16 F '63. (MIRA 16:2)
(Pneumatic gauges)

VYSOTSKIY, A.V.; KUROCHKIN, A.P.; LIND, A.B.; TSIDULKO, F.V.; ROSTOVYKH, A.Ya., kand. tekhn. nauk, dots., retsenzent; KURATSEV, L.Ye., red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Pneumatic measurements of linear dimensions] Pnevmaticheskie izmereniia lineinykh razmerov. Moskva, Mashgiz, 1963. 267 p. (MIRA 16:5)
(Pneumatic gauges) (Pneumatic control)
(Length measurement)

KUROCHKIN, A.P.; TSIDULKO, F.V.

Amplitude-frequency characteristics of pneumatic measuring instruments. Stan.i instr. 34 no.3:31-33 Mr '63. (MIRA 16:5)
(Pneumatic gauges)



675. INCREASING THE LIFE OF SILICA BRICKS MADE FROM BOBROVSK QUARTZITES IN THE ROOFS OF O.H. FURNACES.—Y. D. Tsiegler (*Ogneupory*, 9, 9, 1941). Lime-bonded roof bricks manufactured from these quartzites failed by spalling, since penetration of Fe oxides was insufficient to bring about fusion into a monolithic structure. Addition of ferruginous mineralisers brought about an appreciable increase in life; 1% of mill-scale was more effective than 1·5% of blast-furnace dust. Loosening of the larger grains during service was eradicated by finer grinding of the batch, the max. grain size being reduced to 5 mm.

TSIELENS, E.

24131 TSIELENS, E. Soderzhaniye kholina v semenakh bobovykh Latviyskoy SSR. Izvestiya Akad. Nauk Latv. SSR, 1949, No. 7, S. 71-76. - Rezyume na latysh. Yaz.-Bibliogr: 11 Nazv.

SO: Letopis, No. 32, 1949.

TSIEN, H.S.,
S. S. PEIFER, ZhPKh, 1952, 23 256-263.

BELCHER,E.H.; COHEN,M.; DUDLEY,R.A.; PARKER,H.G.; TSIEN,K.C.; VETTER,H.

Progress in the use of isotopes and radiation sources in medicine. Cas. lek. cesk. 104 no.19:100-104 14 My '65.

1. MAAE a WHO.

9

The production of single crystals of aluminum wires with travelling furnace. L. C. Tsien. *Science Record* (China) 4, 125–32(1951).—A tube furnace, 12 in. long, was fitted with 4 rollers and was moved along a pair of rails by a motor and a system of reduction gears. The wires remained in a const. position within a quartz tube. The furnace was maintained at 610° and was moved at a rate of 2 cm./hr. The size of the crystals obtained with 99.991% pure Al was a function of the pre-annealing temp. and the per cent extension imparted to the wires after annealing. Optimum conditions with 2 mm. wire were an annealing temp. of 550° and an extension of 2.5%. In the majority of cases the crystals occupied the entire cross-section and were as long as 85 mm. in a 100 mm. specimen. Com. Al, 99.24% pure and contg. Fe, Si, and Cu as the principal impurities, tended to form a series of columnar crystals parallel to the axis of the wire. H. L., Jr.

TSIF'ROV, N.

Wrote about the success of the Sounding device designed by YUDIN, [illegible] R.

N. [illegible]CHNOY Transport, No. 56; Moscow; 12 July 1946.

Soviet Source:
Abstracted in USAF "Treasure Island", in file in Library of Congress, Air Information Division, Report No. 97904 Unclassified

TSIPPM, I.

Sketches on tactics.

Moskva, Gos. voen. izd-vo, 1932.

210 p.

54-47939

U165.T8

1. Tactics

NESMEYANOV, A.N.; TSIFKA, I.

Chemical state of atoms produced by nuclear transformations.
Part 3. Radiokhimiia 1 no.1:82-85 '59. (MIRA 12:4)
(Phosphorus--Isotopes)

TSIFRINOVICH, A.Z., inzh.

Precast reinforced concrete in industrial construction. Mont. i spets. rab. v stroi. 26 no.8:3-5 Ag '64. (MIRA 17:11)

1. Proyektnaya kontora tresta Stal'montazh.

TSIFRINOVICH, A. Z., inzh., laureat Stalinskoy premii

Equipment for erecting steel and heavy reinforced concrete frameworks of industrial buildings. Sbor. trud. MISI no.39: 472-473 '61. (MIRA 16:4)

1. Trest Stal'konstruktsiya Ministerstva stroitel'stva RSFSR.

(Cranes, derricks, etc.)
(Structural frames)

TSIFRINOVICH, A.Z., inzh.

Decreasing the labor required to assemble blast furnaces. Mont. i spets. rab. v stroi. 24 no.6:21-23 Je '62. (MIRA 15:6)

1. Gosudarstvennyy soyuznyy trest po montazhu stal'nykh konstruktsiy Glavstal'konstruktsii Ministerstva stroitel'stva predpriyatiy metallurgicheskoy i khimicheskoy promyshlennosti. (Blast furnaces)

TSIFRINOVICH, A.Z., inzh.: ALEKSEYEV, P.V., inzh.

Reconstruction of a blast furnace at the Kosogorskiy Metallurgical Plant. Mont. i spets. rab. v stroi. 22 no.5:3-8 My '60.
(MIRA 13:10)

1. Trest Stal'montazh.
(Tula Province—Blast furnaces—Maintenance and repair)

TSIFRINOVICH, A.Z., inzhener.

Assembling large-span structures. Stroi. prom. 35 no.5:11-16 My '57.
(Building, Iron and steel) (Steel, Structural) (MLRA 10:6)

REZNICHENKO, Ye.S., inzh.; TSIFRINOVICH, A.Z., inzh.; KHAVIN, B.N., red. izd-va; TEMKINA, Ye.L., tekhn.red.; BOROVNEV, N.K., tekhn.red.

[Instructions on the fitting and welding of steel constructions for blast furnace and gas purification plants] Instruktsiia po sborke i svarke stal'nykh konstruktsii domennykh tsekhov i gazoochistok (VSN 18-59). Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 93 p. (MIRA 13:10)

1. Russia (1917- R.S.F.S.R.) Ministerstvo stroitel'stva.
(Blast furnaces--Design and construction)
(Structural frames--Welding)

TSIFRINOVICH, A.Z., inzhener.

The derrick crane mounted on a railroad car produced by the "Stal'konstruktsiia" trust. Mekh.stroi. 4 no.3:11-12 Mr.'47. (MLRA 9:2)

1.Promstal'montazh.
(Cranes, derricks, etc.)

TSIFRINOVICH, A.Z., inzh.

Erecting bin trestles using precast prestressed reinforced construction elements. Mov. tekh. mont. i spets. rab. v stroi. 21:5-9 Je '59. (MIRA 12:8)

1.Proyektnaya kontora tresta Stal'montazh.
(Precast concrete construction) (Blast furnaces)

KOPP, L.M., inzhener; TSIFRINOVICH, A.Z., inzhener, redaktor; BAGAK, B.A., redaktor.

[Assembling steel structural elements] Montazh stal'nykh konstruktsii. Izd. 2-e dop. i perer. Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1954. 149 p. (MLRA 7:8)

(Hoisting machinery) (Building, Iron and steel)

14(10)

SOV/98-59-2-3/22

AUTHORS: Tsifrinovich, A.Z. and Mazur, L.T., Engineers

TITLE: The Erection of a Shroud Crossing Over the Volga River (Montazh vantovogo perekhoda cherez Volgu)

PERIODICAL: Gidrotechnicheskoye stroitel'stvo, 1959, Nr 2, p 11-20 (USSR)

ABSTRACT: A single-span, 874 m long shroud bridge was erected during the construction of the Stalingrad Hydroelectric Power Plant. Four rope-ways, suspended under the bridge, with a total passing capacity of 900 tons an hour, served for the transportation of fillers in trolleys for the construction of the earth dam between the right shore of the Volga river and the Peschanyy island. The shroud bridge was composed of four parallel

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14(10)

SOV/98-59-2-3/22

The Erection of a Shroud Crossing Over the Volga River

shroud trusses (each 874 m long), fixed to two pylons (132 m high) at each end of the bridge. The shroud trusses are divided into nine panels to the lower points of which transverse frames are suspended which serve as supports for the four rope-ways. The authors give a detailed description of the erection of this bridge. There are 2 photos and 6 diagrams.

Card 2/2

TSIFRINOVICH, A.Z., inzh.

Tasks of organizations of the Main Administration for the Building and Installation of Prefabricated Steel Structures for 1959-1965. Nov.tekh.mont. i spets.rab. v stroi. 21 no.1: 19-28 Ja '59. (MIRA 12:1)

1. Proyektnaya kontora tresta Stal'montazh.
(Cranes, derricks, etc.)

BELYAYEV, Leonid Mikhaylovich; FRANTSUZOV, Yakov Leonovich; OBUKHOV, A.I., retsenzent; TSIFRINOVICH, A.Z., inzh., red.; STUPIN, A.K., red. izd-va; EL'KIND, V.D., tekhn.red.

[Assembling of cranes and loaders] Montazh kranov i peregruzhatelei. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 299 p. (MIRA 11:5)
(Cranes, derricks, etc.)

TSIFRINOVICH, A.Z., laureat Stalinskoy premii, inzhener.

New electric erection crane with a 20-ton lift capacity. Mekh.stroi. 4 no.8:9-12 Ag '47. (MLRA 9:2)

1.Trest "Stal'montazh".
(Cranes, derricks, etc.)

TSIFRINOVICH, A. Z.

Skorostnoi montazh metallokonstruktsii domennogo tsekha. Speed assembly of metal blast furnace plants. Moskva, Gos. izd-vo stroit. lit-ry, 1947. 132 p. (49-17308)

TN713.T7

1. Blast-furnaces.

65753

TSIFRINOVICH, A. Z.

PA 20/49T67

USSR/Engineering Nov 48
Construction Industry
Stacks, Smoke-

"Erection of Steel Smokestacks," A. Z. Tsifrinovich, Engr, Laureate of Stalin Prize, V. D. Areshkovich, I. M. Livshits, Engineers, 5½ pp

"Stroitel' Prom" No 11

"Stalmontazh" Trust has been responsible for erecting many steel smokestacks. Briefly describes experience gained and optimum methods. Engineering data necessary for the raising of separate sections of steel smokestacks.

FDB 20/49T67

TSIFRINOVICH, A.Z., inzh.

Assembling the structural elements for rolling mill buildings. (MIRA 14:9)
Prom.stroi. 39 no.8:17-23 '61.
(Rolling mills) (Building)

ACCESSION NR: AP4007911 S/0108/63/018/012/0010/0012

AUTHOR: Tsifrinovich, I. I. (Society active member)

TITLE: Directivity of a ring multidipole antenna

SOURCE: Radiotekhnika, v. 18, no. 12, 1963, 10-12

TOPIC TAGS: ring multidipole antenna, ring antenna, multidipole antenna, multielement antenna, radio direction finding, direction finding antenna, multimode dipole antenna, ring antenna directivity, antenna directivity

ABSTRACT: A ring multielement array consisting of n radiators (dipoles) arranged in a circle of radius R is used for radio direction finding, etc. Theoretically, the best radiation pattern can be secured by the array with an infinite number of radiators. However, with a given R/λ , a small, "optimum," number n of radiators exists which ensures a sufficiently good radiation pattern:

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ACCESSION NR: AP4007911

R/λ :	1/8	1/4	1/3	1/2	3/4	1
n :	6	8	8	10	12	18

A formula is offered for estimating the width of the major lobe. Increasing the number of radiators over 4 does not affect the shape of the major lobe; it affects only minor lobes. The maximum level of the first minor lobe cannot, in principle, be less than 0.4. Other minor lobes have less than 0.4 levels. A table and a diagram are submitted for estimating the radiation pattern on the basis of n and R. Orig. art. has: 1 figure, 3 formulas, and 2 tables.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunications)

SUBMITTED: 29Jun62 DATE ACQ: 07Jan64 ENCL: 00

SUB CODE: SP, RA NO REF SOV: 000 OTHER: 000

Card 2/2

TSIFRINOVICH, I.I.

Directivity of an annular multielement antenna. Radiotekhnika 18 no.12: 10-12 D '63. (MIRA 17:1)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.

KROLENKO, S.A.; TSIFRINOVICH, S.Ya.

Effect of change in the calcium ion concentration in Ringer's solution on the contraction and action potential of muscle fibers. TSitologiia 5 no.6:665-670 N-D '63.
(MIRA 17:10)

1. Laboratoriya fiziologii kletki Instituta tsitologii AN SSSR, Leningrad.

KHOLENKO, S. A. and TSIFRINOVICH, S. Ia.

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1. Mogilev-Podol'skiy machinostroitel'nyy zavod im. S.M.Kirova. 2. Glavnyy inzh. Mogilev-Podol'skogo mashinostroitel'nogo zavoda im. S.M.Kirova (for Barmak). 3. Glavnyy konstruktor Mogilev-Podol'skogo mashinostroitel'nogo zavoda im. S.M. Kirova (for Gertskis):

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132-58-2/17

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TITLE: Chrisolites from the Kimberlite Tubular Columns of Yakutiya as Precious Stones for the Jewelry Industry (Khrizolity kimberlitovykh trubok Yakutii kak dragotsennyye kamni dlya yuvelirnoy promyshlennosti)

PERIODICAL: Razvedka i Okhrana Nedr, 1958, Nr 2, pp 8-9 (USSR)

ABSTRACT: During the exploitation of diamond-bearing kimberlite tubular columns in Yakutiya, crystals of pure clivine - chrisolites - are often found. Technological examination of these chrisolites confirmed their importance for the jewelry industry.

ASSOCIATION: VSEGEI

Card 1/1 1. Industry-USSR 2. Jewelry

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'60. Zhur.nevr.i psikh. no.1:124-125 '60. (MIRA 13:6)
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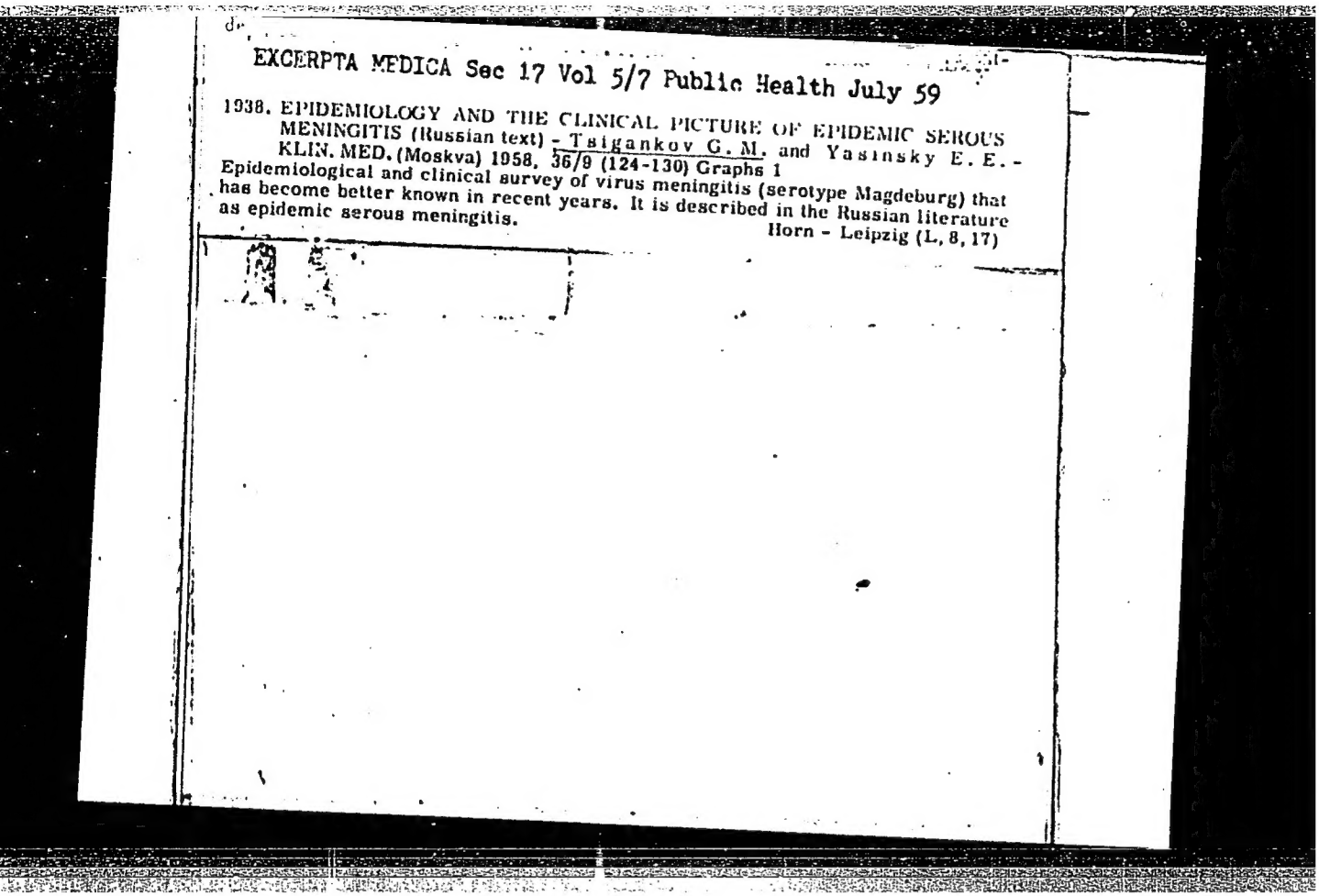

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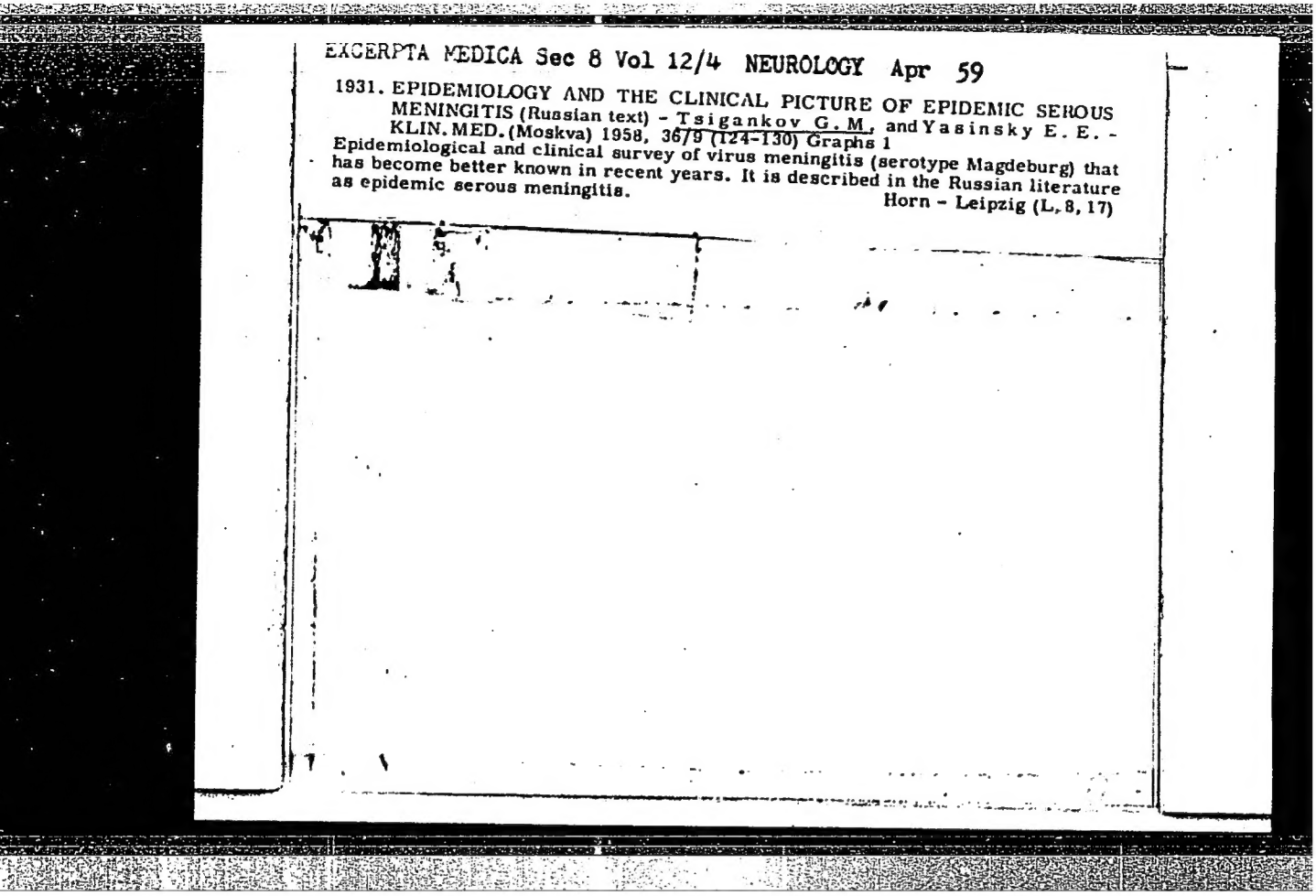
1938. EPIDEMIOLOGY AND THE CLINICAL PICTURE OF EPIDEMIC SEROUS MENINGITIS (Russian text) - Tsigankov G. M. and Yasinsky E. E. - KLIN. MED. (Moskva) 1958, 36/9 (124-130) Graphs 1

Epidemiological and clinical survey of virus meningitis (serotype Magdeburg) that has become better known in recent years. It is described in the Russian literature as epidemic serous meningitis.

Horn - Leipzig (L, 8, 17)



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Epidemiological and clinical survey of virus meningitis (serotype Magdeburg) that has become better known in recent years. It is described in the Russian literature as epidemic serous meningitis.

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